

CALVING EASE

January 2000

Sam Leadley (Attica Veterinary Associates) & Pam Sojda (Offhaus Farms)

Cold Weather and Newborn Calves

How cold is “cold?”

Scientists tell us that calves have a “thermoneutral zone.” It’s the range of temperature where the calves are comfortable, neither too warm or too cold. Think of it as a low-stress environment for calves. For newborn Holstein calves the zone is from a low of 50 to a high of 78 degrees F (10 to 25 C). For comparison, the lower temperature for one month old Holstein calves is 32 degrees F.

For a newborn this lower temperature is where they have to burn reserve energy to maintain core body temperature. This lower limit goes up if she is exposed to wind, has limited feed intake, is in a low body condition or is fed cold milk.

Okay, so what do I do when the temperature goes below 50?

Closeup cow nutrition. A special kind of fat in the newborn calf (brown fat) helps her deal with temperatures below 50 degrees F. Since this fat converts directly to heat, it’s very important in cold weather for a calf to have an ample supply of it. (Cold stress releases a hormone, norepinephrine, that triggers the calf’s ability to use this brown fat.) A ninety-pound Holstein calf from a dam on a good ration may have nearly one and one-half pounds of this cold-fighting fat. Note! “From a dam on a good ration.” The dam has to have adequate protein and energy to provide this special kind of fat for her calf.

Another benefit of good closeup cow nutrition is that they have better quality colostrum for the newborn’s first feeding. Also, these cows tend to have more mature calves with less calving difficulty. “Calves experiencing difficult birth have lower metabolic rates, lower rectal temperatures, poor suckle reflex, reduced appetite and lower colostrum absorption.” (Cattell, p10)

Standing up. Bovines are peculiar in their degree of cold tolerance. In part this is due to their ability to stand up and walk so soon after birth. That is important since it has been shown that just the act of standing up for the first time can increase energy levels as much as four times. In addition to helping the dam dry off the newborn calf we can also be certain to see that the calf stands up as soon as she is able.

Feed colostrum. Colostrum is about twenty-two to twenty-five percent dry matter (compared to twelve to thirteen percent for whole milk). It’s fat level will average around six percent for Holsteins and higher for colored breeds. If practical, continue feeding colostrum longer than just the first day. Some research has shown that colostrum feeding raises the rate at which the calf

burns food to create energy (basal metabolism). This increased ability to burn food to keep warm helps calves tolerate the abrupt change from the dam's uterus to cold winter temperatures.

Provide the calf a place to lie down out of drafts. In the extreme case, we know that a twenty-five mile-an-hour wind has the same effect as dropping the temperature twenty-seven degrees. What does this do to the thermoneutral zone? It raises the temperature at which the calf has to burn reserves to keep warm. In this extreme case a calf standing in the wind would have to start burning energy to keep warm at 77 degrees F (25 C). In general, less wind is better than more wind.

Provide adequate bedding. Ample bedding increases insulation from the earth or concrete underneath the calf. This bedding should also act as a barrier to moisture. A wet hair coat will transfer heat away from the calf's body much faster than a dry one. Dry comfortable bedding also encourages calves to lie down thus decreasing body heat losses into the cold environment.

How about feeding in cold weather for very young calves?

When it gets cold calves need more energy to stay healthy and gain weight. The minimum recommended increase in energy for 25 degrees F is thirty-three percent and for 0 degrees F sixty-seven percent. For Western New York winters in general a practical guideline is fifty percent increase.

How does a fifty percent increase in energy translate into practice? For whole milk feeders this means feeding three quarts per feeding twice daily instead of two quarts per feeding. For milk replacer feeders one alternative is to mix the usual ratio of eight ounces of powder for two quarts of milk replacer and feed more of it. That is, feed three quarts per feeding just like whole milk. The other milk replacer alternative is to add additional powder to the same quantity of water for a more concentrated mix. Then this mix is fed at the same rate as in the summer, two quarts per feeding twice a day. Some caution has to be used with more concentrated mixes, however, since the calves need to have access to liquid water even in cold weather.

All calf raisers know, however, that not all calves less than two weeks old will drink six quarts of milk a day. That's true. But, just because one or two calves out of ten won't drink all six quarts a day doesn't seem like a good reason not to feed the others the full amount. It is more difficult and time consuming to feed larger amounts to very young calves. The reward is that in spite of the cold they gain weight and stay healthy.

Reference Cited: Cattell, M. B., "Managing the Milk-Fed Calf in Extreme Weather Conditions," PP 9-20 in Proceedings of 3rd Annual Professional Dairy Heifer Growers Association Meeting, March, 1999.

Editor's Note:

Sharp-eyed readers will notice from the masthead that Sam has retired from raising calves at Noblehurst Farms. He has taken a position as calf/heifer management specialist with the Attica Veterinary Associates practice, 116 Prospect Street, Attica, New York 14011.

If you know of someone that doesn't currently receive Calving Ease but would like to, tell them to **WRITE** to Calving Ease, 11047 River Road, Pavilion, NY 14525 or to **CALL** either 716-591-2660 (Attica Vet Assoc office) or 716-343-8128 (Offhaus Farms office) or **FAX** (716-591-2898) or **e-mail** sleadley@servtech.com .